Below you will find draft home rule legislation for ranked choice voting in the city of Northampton. It has been annotated with seven endnotes (identified with a number in brackets starting with **[1]**) that reference questions we believe the committee ought to discuss and answer.

“AN ACT RELATIVE TO RANKED CHOICE VOTING IN THE CITY OF NORTHAMPTON”

SECTION 1. The Charter of the City of Northampton, is hereby amended by inserting after section 8-7 the following section:

SECTION 8-8. RANKED CHOICE VOTING

(a) For the purposes of this section, the following terms shall have the following meanings, unless the context clearly requires otherwise:

“Batch elimination” is the simultaneous defeat of multiple candidates.

"Concluded ballot," a ballot that does not rank any continuing candidate or contains an overvote at the highest-ranked continuing candidate **[1]**.

"Continuing candidate," a candidate who has not been defeated or elected.

“Election threshold,” the number of votes sufficient for a candidate to be elected in a multi-seat election. It is calculated by dividing the total number of votes counting for continuing candidates in the first round by the sum of the number of seats to be elected and 1, disregarding any fractions, and then adding 1 **[2]**.

"Highest-ranked continuing candidate," the continuing candidate with the highest ranking on a voter's ballot.

“Ranked choice voting,” a method of casting and tabulating ballots in which voters rank candidates for office in order of preference.

"Last-place candidate," (i) the candidate with the lowest vote total in a round of the ranked-choice voting tabulation; or (ii) a candidate that is defeated in batch elimination.

"Overvote," a circumstance in which a voter ranks more than 1 candidate at the same ranking.

"Ranking" means the number assigned on a ballot by a voter to a candidate to express the voter's preference for that candidate. Ranking number 1 shall be the highest ranking, ranking number 2 shall be the next-highest ranking, and so on.

“Surplus fraction,” the number equal to the difference between an elected candidate’s vote total and the election threshold, divided by the candidate’s vote total.

“Transfer value,” the proportion of a vote that a ballot will count to its highest-ranked continuing candidate. Each ballot shall begin with a transfer value of 1. If a ballot counts to the election of a candidate under subsection (d)(1), it receives a lower transfer value.

(b) All city offices shall be elected by ranked choice voting, except for a single-seat office when the number of certified candidates is less than or equal to 2 or a multi-seat office when the number of certified candidates is less than or equal to the number of seats to be elected **[3]**. Ranked choice voting elections shall be tabulated in rounds pursuant to this section.

(c) In any single-seat election, each round shall begin by counting the number of votes for each continuing candidate. Each ballot shall count as 1 vote for its highest-ranked continuing candidate. Concluded ballots shall not be counted for any continuing candidate. Each round shall end with 1 of the following 2 outcomes:

(1) If there are more than 2 continuing candidates, the last-place candidate shall be defeated or the last-place candidates shall be defeated in batch elimination, and a new round shall begin; or

(2) If there are 2 continuing candidates, the candidate with the fewest votes shall be defeated, the candidate with the most votes shall be elected, and tabulation shall be complete **[4]**.

(d) In any multi-seat election, each round shall begin by counting the number of votes for each continuing candidate. Each ballot shall count, at its current transfer value, for its highest-ranked continuing candidate. Concluded ballots shall not count for any continuing candidate. In the first round only, the election threshold shall then be calculated **[5]**. Each round shall end with 1 of the following 3 outcomes:

(1) If at least one candidate has more votes than the election threshold, then all such candidates shall be elected. Each ballot counting for an elected candidate shall be assigned a new transfer value by multiplying the ballot's current transfer value by the surplus fraction for the candidate. Each elected candidate shall be deemed to have a number of votes equal to the election threshold in all future rounds, and a new round shall begin;

(2) If no candidate has more votes than the election threshold and the sum of the number of elected candidates and continuing candidates is more than the sum of the number of seats to be elected and 1, the last-place candidate shall be defeated or the last-place candidates shall be defeated in batch elimination, and a new round shall begin; or

(3) Otherwise, the continuing candidate with fewest votes shall be defeated, all other continuing candidates shall be elected, and tabulation is complete.

(e) Batch elimination shall apply to the largest possible group of continuing candidates such that the sum of the votes of candidates in the group is less than the individual number of votes of every continuing candidate not in the group, and provided that the number of continuing candidates not in the group is at least 1 more than the remaining number of positions to elect.

(f) If 2 or more last-place candidates are tied and batch elimination does not apply, the candidate with the fewest votes in the prior round shall be defeated. If 2 or more such tied candidates were tied in the prior round, the second tie shall be decided by referring similarly to the standing of the candidates, in terms of votes, in the second-prior round. This process shall be applied successively as many times as necessary, a tie shown in any prior round shall be decided by referring to the standing of the candidates in the round immediately preceding the tie. **[6]**

(g) The city clerk may make any changes to the ranked choice voting ballot and tabulation process necessary to ensure the integrity and smooth functioning of the election, provided that ranked choice voting shall still be used and the fewest number of changes are made to achieve such purpose.

SECTION 2. [Strike all the obsolete text about preliminary elections]

SECTION 3. This act shall take effect upon its passage. **[7]**

Questions.

1. *When should a ballot be concluded?*

The draft above considers a ballot "concluded" (also known as "exhausted") at the first rank at which there is an overvote. However, some RCV implementations will disregard any ranking with an overvote and use the next valid ranking on the ballot in its place. Dominion's Democracy Suite software does support this alternative if the committee prefers it.

The draft does *not* conclude a ballot when there are skipped rankings; nor does Democracy Suite support concluding a ballot at skipped rankings. It is rare for an RCV implementation to conclude a ballot after a single skipped ranking, but some do conclude a ballot after *two or more* consecutive skipped rankings. The rationale is that if a voter marks one candidate as their first choice and one as their last, leaving all other rankings blank in between, it might be unfair to treat the voter's last ranking as their second choice. Since Democracy Suite does not support this option, the committee could only include this option knowing that the clerk's implementation, pursuant to subsection (g), would have to differ until such a time as the software supports this alternative.

Importantly, the ImageCast precinct tabulators do detect both overvotes and skipped rankings and notify the voter when they occur, so that they have the opportunity to cast a new ballot.

2. *How should the threshold be calculated?*

The draft above ensures that multi-seat offices are elected *proportionally*, meaning that communities of interest elect candidates in proportion to their voting strength. The transfer of votes from the weakest candidates helps smaller constituencies, while the transfer of surplus from the strongest candidates generates majority control. Voters "spend" their votes on their top-ranked candidate, and if that candidate exceeds the threshold, they have some of their vote leftover for their next choice. This ensures that large voting blocs are fairly represented by multiple allied candidates.

The draft above includes the most common calculation of the election threshold, and it is the only proportional threshold that Democracy Suite supports. Given v votes and n seats, it is the smallest integer greater than $v/(n + 1)$. Mathematically, it is the smallest integer at which a candidate is guaranteed a seat. For example, if there are 1000 voters in the Northampton City Council two-seat at-large city council race, any candidate with 334 or more votes would win. Once two candidates have 334 votes, no other candidate can reach 334 votes mathematically (100 - 334 - 334 = 332).

3. *When must ranked choice voting be used?*

The draft calls for all offices to be eligible for RCV, in part for consistency, but also because anything short of all offices would mean that Northampton would still hold preliminary elections.

Although all offices are eligible for RCV, the draft does not call for RCV to be used unless the number of candidates in a single-seat race exceeds 2 or the number of candidates in a multi-seat race exceeds the seats to be elected. RCV could theoretically be useful with fewer candidates on the ballot, if there are also competitive write-in campaigns. But the likelihood of a competitive write-in campaign is low enough that we're comfortable with the provision as drafted. Using RCV when fewer candidates are on the ballot would probably increase ballot-printing costs for too little gain. Any election in this situation

would use plurality voting, as they do today.

4. *When should tabulation be complete?*

Note that contrary to most descriptions of RCV, the draft text does not say that the winner of a single-seat election must win a majority of the vote cast. Instead, candidates are continually eliminated until the field is reduced to two candidates. Waiting until the field is reduced to two, rather than stopping as soon as a candidate exceeds 50%, never changes who wins, but it has become common practice in RCV jurisdictions. The extra rounds cost nothing to calculate, and they provide greater clarity about how the voters feel about the winner compared to the runner-up. Read about the 2016 mayoral race in Berkeley, California for a motivating example of how reduce-to-two provides greater clarity.

5. *Should the threshold be recalculated each round?*

Most multi-seat implementations of RCV calculate the threshold to win a multiseat election once at the outset of the election, as drafted above. Democracy Suite supports an alternative where the threshold is recalculated at the beginning of each round, using the number of continuing ballots at the beginning of that round as the numerator, so the election threshold decreases as ballots are concluded. Reducing the threshold each round has some benefits: it wastes somewhat fewer votes and so theoretically could result in a fairer outcome. A downside is that it could complicate the presentation of results to the public, and it lacks consistency with other US jurisdictions, all of which thus far have adopted a static threshold. Seeing as it's unlikely to change the result, the draft above includes a static threshold.

6. *How should ties for the fewest votes be resolved?*

In all RCV elections in the US to date, there has never been a tie for fewest votes where batch elimination did not apply. Still, such an event could in theory happen in the future. The legislation in many jurisdictions calls to resolve such ties randomly, but random tie-breakers are not allowed under Massachusetts law. The draft above prescribes the most common non-random method, often called "backwards tie-breaking," where ties are broken in favor of which candidate had more votes in the prior round; and if they are tied in the prior round, the round before that, and so on.

Democracy Suite also supports "forward tie-breaking," where instead of using the prior round and working backwards, tie-breaking uses the first round and works forward. In our view, backwards tie-breaking uses strictly more relevant information, because the later rounds reflect the standing of candidates after more ballots have been transferred. Seeing as backwards tie-breaking is also the more common method, we see no argument for deviating from the draft on this aspect.

7. Do you want to include a local approval provision in the text?

The legislation could directly include a provision that the legislation be approved by Northampton voters on the ballot. If such a provision is not included, our understanding is that the legislature might add one anyway, as they do like to see evidence of voter support for any change to elections. That said, given that more than 70% of Northampton voters supported Question 2 in November, and given the strong support for the city council for the reform, perhaps the legislature could be convinced that is unnecessary in this case. On the third hand, it may make your final recommendation an easier "yes" vote if local approval is required in the text. We defer entirely to the committee on this decision.